

UNSCEAR BRIEFING NOTE

(Embargoed until 11.00 CET 21 July 2009)

NON-TARGETED & DELAYED EFFECTS OF IONIZING RADIATION

VIENNA|21 July 2009| Current risk estimates for cancer and hereditary effects in humans from irradiation do not need to be changed, in spite of new findings about non targeted and delayed cellular effects, says the United Nations Scientific Committee on the effects of Atomic Radiation (UNSCEAR).

Non-targeted and delayed effects occur in cells that were themselves not irradiated. They include genomic changes in the daughters of irradiated cells, changes in non-irradiated cells as a result of signals from irradiated cells (so-called bystander effects), and potential health effects in offspring due to irradiation of the parents.

“These non-targeted effects have the potential to amplify the biological effectiveness of a given radiation dose by increasing the number of cells that experience effects over those directly exposed to the radiation,” said Norman Gentner, the Chair of UNSCEAR.

The issue of non-targeted and delayed effects of radiation is the subject of one of three annexes of a major report published today by UNSCEAR.

The 2006 report also assesses the effects of radon, and the effects of radiation on the immune system. Its release was delayed because of resource issues that have been corrected.

The Committee found that any clear relationship between non-targeted effects and observed health effects attributable to radiation remains in contention.

It also stressed that risk estimates are based on population health studies, which implicitly incorporate all elements including direct targeted effects of irradiation as well as non-targeted and delayed effects.

"In light of these considerations the overall view of the Committee is that the risk estimates currently available do not require changes," Gentner said.

The UNSCEAR report also points out that currently, human health risk estimates for effects associated with radiation exposure are based primarily on the view that the detrimental effects of radiation only occur in irradiated cells. A central principle in the radiation sciences has been that energy from radiation must be deposited in the cell nucleus to cause damage through chromosomal changes. Implicit is that the biological consequences of cellular irradiation only affect the irradiated cell and that non-irradiated cells do not share the legacy of the radiation exposure.

UNSCEAR was established in 1955, reporting to the UN General Assembly on levels and effects of radiation. Its authoritative findings led to the Partial Test Ban Treaty prohibiting atmospheric testing of nuclear weapons, and underpin international standards for radiation protection.

Press Contact

Peter Rickwood
+43 664 248 9680

www.unscear.org